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COST DEVELOPMENT FOR USCG INTERNATIONAL ICE PATROL ACTIVITIES

Annex E of Cost and Operational Effectiveness Analysis for Selected International Ice Patrol Mission Alternatives

Robert L. Armacost

EER Systems Corporation
Vienna, VA

FINAL REPORT

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U.S. Coast Guard
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G. T. Gunther
Technical Director, Acting
United States Coast Guard
Research & Development Center
1082 Shennecossett Road
Groton, CT 06340-6096

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16. Abstract

This report is Interim Report Volume 5 for the Cost and Operational Effectiveness Analysis for Ice Patrol Mission Analysis Study. The basic authority for conducting the International Ice Patrol includes a provision for those countries that benefit from the Ice Patrol Service to reimburse the Managing Government (the United States) in proportion to the benefiting tonnage from that state. The reimbursement requires the Managing Government to provide the cost of services to the contributing governments. The Department of State, using United States and Canadian Customs data, computes the proportionate share. Fundamental to such a computation is the development of the actual cost of operation of the International Ice Patrol. These costs are based on an analysis of actual operational and managerial costs. The costs provided by the Coast Guard arise from two primary sources: the cost of the operation of the Commander, International Ice Patrol and his operational staff, and the cost of conducting the surveillance flights using Coast Guard aircraft. The aircraft based costs constitute approximately 85% of the total cost of operation of the IIP.

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METRIC CONVERSION FACTORS

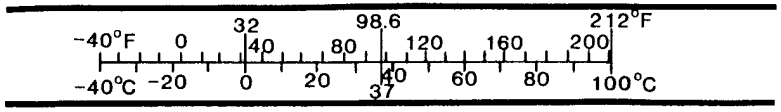
Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply By	To Find	Symbol
	LENGTH			
in	inches	* 2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (WEIGHT)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
	VOLUME			
tsp	teaspoons	5	milliliters	ml
tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (EXACT)			
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly).

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply By	To Find	Symbol
	LENGTH			
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
	AREA			
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
	MASS (WEIGHT)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
	VOLUME			
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	0.125	cups	c
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
	TEMPERATURE (EXACT)			
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



COST DEVELOPMENT FOR USCG INTERNATIONAL ICE PATROL ACTIVITIES

ABSTRACT

The basic authority for conducting the International Ice Patrol includes a provision for those countries that benefit from the Ice Patrol Service to reimburse the Managing Government (the United States) in proportion to the benefiting tonnage from that state. The reimbursement requires the Managing Government to provide the cost of services to the contributing governments. The Department of State, using United States and Canadian Customs data, computes the proportionate share. Fundamental to such a computation is the development of the actual cost of operation of the International Ice Patrol. These costs are based on an analysis of actual operational and managerial costs. The costs provided by the Coast Guard arise from two primary sources: the cost of the operation of the Commander, International Ice Patrol and his operational staff, and the cost of conducting the surveillance flights using Coast Guard aircraft. The aircraft based costs constitute approximately 85% of the total cost of operation of the IIP.

INTRODUCTION

Objective.

The purpose of this report is to review the methods used to estimate the actual cost of conducting the International Ice Patrol (IIP) and to identify current cost drivers in the IIP operation. This cost is used as a basis for recovering the costs from those governments that have agreed to reimburse the United States for providing the Ice Patrol Service. This report describes the current procedure, identifies potential costs which are not currently considered, and discusses those costs which are explicitly incurred due to the existence of the IIP and those costs which represent allocations to the IIP.

Coast Guard Costing Overview.

Cost development/allocation in the U.S. Coast Guard is usually based on direct costs incurred by an operational unit, personnel costs attributable to that unit, and the cost of services provided to the unit by other operational and operational support units. These costs are often a combination of actual costs incurred and average costs associated with assignment of personnel or the operation of boats, ships and aircraft. In some cases, administrative costs are allocated to the unit.

Actual operating costs for travel and per diem, supplies, equipment, maintenance, fuel, and other purchases are available directly from the accounting system. To supplement those areas where incurred costs are not available, Commandant (G-CFM) has established "Standard Rates" to be used in computing reimbursable charges (USCG, 1991). The standard rates "reflect all readily identifiable cost elements." The standard rates apply to cutters, aircraft, small boats, personnel, pollution clean-up equipment, vehicles, outpatient visits and inpatient days, and aids to navigation. The primary areas of interest for the IIP are aircraft and personnel. The guidance directs that out-of-pocket costs (e.g., extra maintenance, personnel travel and per diem, special purpose equipment) are to supplement the standard rates. Specific cost categories provide additional guidance on how the rates are to be used and what factors are involved.

Aircraft costs include facility costs, field operational support costs, administrative support costs, and depreciation costs. The facility costs include personnel (based on standard rates for salary, travel, permanent change of station, and medical), fuel (actual), and maintenance (two year average per flight hour). Field operational support costs are allocated on an hourly basis using the programmed flight hours for the aircraft. Administrative support costs are estimated at 30% of the total of facility and field operational support costs. Depreciation costs are based on estimated life and programmed flight hours. The standard costs from the 1991 Commandant Instruction are included in Table 1 for the HC-130 and HU-25 aircraft for an external agency/reimbursement. Although the instruction is not perfectly clear, it appears that the actual fuel costs are to be added to the facility costs after applying the standard rates to the hours flown. The administrative support factor of 30% should then be applied to the fuel costs.

Table 1. Aircraft Standard Rates (COMDTINST 7310.1E dtd 13 Jul 1991).

A/C Type	Facility Cost	Field Operational Support	Administrative Support	Depreciation	Total
HC-130	2,102	1,001	931	210	4,244
HU-25	2,185	490	803	410	3,888

The standard rates for personnel apply when the personnel used are not involved in another unit for which other standard rates apply (e.g., cutter, aircraft, boat) and not for extended periods of time. The standard rates include costs for pay, allowances, government contribution to employee benefits, training, and permanent change of station costs. In addition to the standard rates, actual costs for travel and per diem must be included in the reimbursement. Note that this cost model doe not include separate administrative support costs for personnel. The standard rates for "outside government" are indicated in Table 2 along with the annual rate assuming 1,738 hours per year.

In addition to the Commandant Instruction, tables of detailed standard personnel costs are developed for use in costing proposals. Separate tables are developed for personnel costs, PCS costs, Operating and Maintenance (O&M) costs, training costs, and medical costs. The recurring costs for those cost elements are included in Table 3 for selected ranks and levels.

Table 2. Personnel Standard Rates (COMDTINST 7310.1E dtd 13 Jul 1991).

Category	Hourly Rate	Annual Rate
O-5/6, GS/GM-14/15	52	$90,376
O-3/4, GS/GM-12/13	38	$66,044
O-1/2, GS-9--GS-11	27	$49,926
E-6--E-9	24	$41,712
E-1--E-5	17	$29,546

Table 3. Annual Personnel Standard Rates--1995 (Kearney, 1995).

Rank/Level	Salary	PCS	O&M	Training	Medical	Total
CDR (O-5)	77,352	1,858	3,257	1,431	2,917	$86,815
LCDR (O-4)	65,346	1,858	3,257	1,431	2,917	$74,809
LT (O-3)	59,031	1,858	3,257	1,431	2,917	$68,494
SCPO (E-8)	47,038	1,416	2,999	672	2,917	$55,042
PO1 (E-6)	34,609	1,416	2,999	672	2,917	$42,613
PO2 (E-5)	29,249	1,416	2,999	672	2,917	$37,253
PO3 (E-4)	24,008	1,416	2,999	672	2,917	$32,012
GS-14	86,300	503	2,506	244		$89,553
GS-11	54,500	503	2,506	244		$57,753

These tables provide the basic guidance for developing cost estimates for the International Ice Patrol.

Activity Based Costing Overview.

In general, an organization's cost accounting system provides information for inventory valuation, process or operational control, and product cost measurement. Traditionally, commercial cost accounting systems have the primary function of costing for inventory valuation and have not adequately addressed the latter two purposes (Stoffel, 1992). Attempts to improve product costing led to refinements in the way overhead was allocated to products based on production levels. This fixed classification approach did not account for cause and effect relationships. This led to further refinements that included identification of "cost drivers," typically volume-based cost drivers and transaction-related cost drivers. Further refinements were made in the development of an Activity Based Costing (ABC) system by classifying activities as unit-level, batch-level, product-level, and facility-level activities (Cooper, 1990).

In many ways, the intent of the Coast Guard costing system is activity-based. The direct cost of operating multi-mission units is obtained directly from the existing accounting system and unit operating costs are allocated to the operating programs based on reported program utilization (e.g., aircraft hours, cutter days) or some other allocation mechanism. The question has always been the allocation mechanism for "overhead" costs. Some have a causal relationship to particular operations while others are very generic and

only support the overall existence of the Coast Guard. Generally, overhead is computed as a fixed percentage (currently 30%) of operational costs rather than examine any functional relationships to define transaction-related cost drivers. In addition, there is no identification/classification of costs as fixed or variable, controllable or noncontrollable, avoidable or nonavoidable, linear or nonlinear, and/or sunk. These categorizations have significant implication when evaluating programs and estimating actual cost savings or increases associated with program decisions. To the extent possible, these factors are identified in the following analysis of IIP costs.

INTERNATIONAL ICE PATROL COSTS

IIP Cost Drivers.

Figure 1 illustrates the relationships among the various cost drivers for the International Ice Patrol.

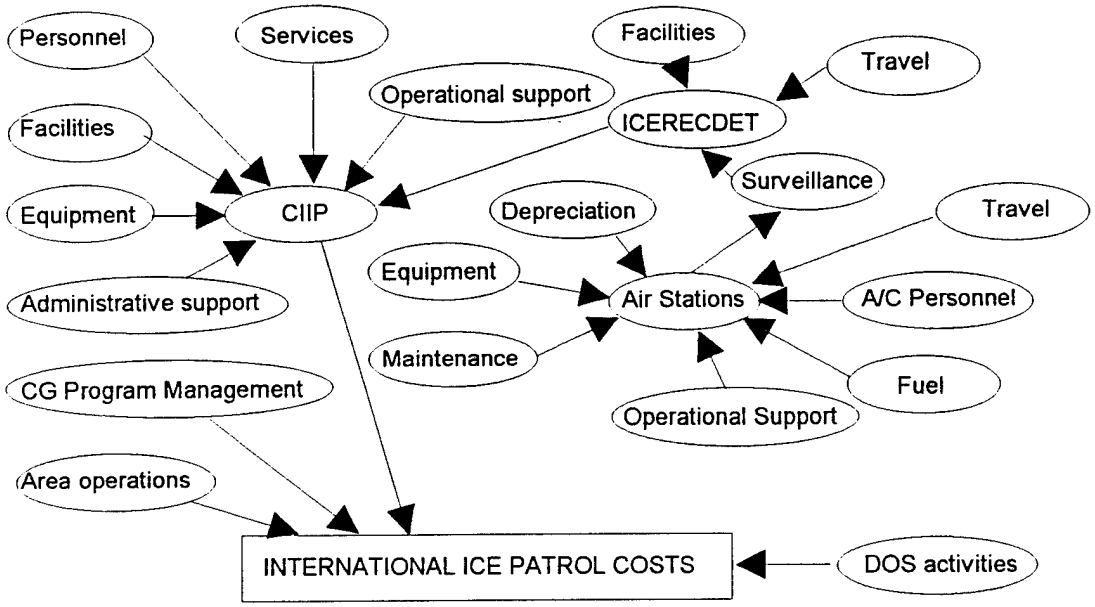


Figure 1. International Ice Patrol Cost Drivers.

The cost of the operation of Commander, International Ice Patrol (CIIP) includes personnel costs, facility maintenance costs, travel costs associated primarily with the deployment of the ICERECDET, operational support costs, administrative support costs, and services such as data collection for WOCE buoys. In the short term, of these costs, only the ICERECDET travel is volume-dependent (based on the number of deployments). The cost is slightly affected by decisions regarding the number of personnel to deploy.

Specific ICERECDET costs include certain facility costs as well as the costs associated with the deployment and operation of the CG surveillance aircraft. These costs

are volume-dependent, both on the number of deployments and the number of flight hours required. The air station related costs are volume-dependent based on the number of flight hours deployed and the actual fuel costs incurred. The annual aircraft personnel, maintenance, operational support, and depreciation costs are allocated in proportion to the number of flight hours as compared with the programmed standard flight hours for the aircraft type. Actual travel and equipment costs are identified separately.

Other program costs include the expenses associated with program management, area operations costs, and activities conducted by the Department of State with respect to cost reimbursement and other treaty issues. The program management costs necessarily include the office of the Program Manager (G-NIO) and the Program Director, as well as other supporting units in Coast Guard Headquarters. In addition, there are some costs incurred by Commander, Atlantic Area staff (Aoa). Finally, the costs of the Department of State as related to IIP should be included.

IIP Cost Development.

At the end of each ice season, Commander, International Ice Patrol prepares an annual report that identifies various costs associated with the operation of the IIP. The report is submitted to Commandant (G-CFM) where it is forwarded to CG FINCEN for further analysis. Copies of the CIIP annual reports for 1990-1994 are included in Appendix I. The direct costs reported by CIIP are related to the cost drivers in Table 4 for the 1994 ice season to illustrate the causal aspects of the costs. The data are also displayed in Figure 2.

The CG Finance Center uses the CIIP costs and applies costs based on standard rates to compute a total cost for the operation of the IIP. It is this total cost that is forwarded to the Department of State for cost reimbursement from the contributing governments. A detailed breakdown of the CG FINCEN costs for 1992-1994 is included in Appendix II. The CG FINCEN computed costs of IIP operations for 1990-1994 are compared in Table 5.

To better understand the cost development, the results of the computation for 1994 are included in Table 6. The aircraft costs are computed using standard per hour personnel, maintenance and operational support costs similar to those in Table 1 as adjusted for inflation. The IIP personnel costs are computed using actual pay grades assigned for the months in which they were engaged in IIP activities. Prior to 1994, only the portion of the personnel costs corresponding to the duration of the "official" season was included, despite the fact that IIP personnel were generally engaged in IIP activities for the entire year. For 1994, it is assumed that the total annual personnel costs of CIIP are devoted to IIP activities unless otherwise stated. The administrative expense computed by the CG FINCEN is 30% of the aircraft operational costs.

Table 4. CIIP Costs by Cost Drivers, 1994.

1994 IIP Season Costs	Commander, International Ice Patrol					ICERECDET		Air Station			
	Administrative Support	Services	Facilities	Equipment	Operational Support	Equipment	IIP Travel	Air Station Travel	Fuel	Equipment	Facilities
HC-130 fuel									$557,200		
HU-25 fuel									$5,841		
Contract lodging							$37,985				
IIP travel							$42,863				
CGAS E City travel								$115,000			
CGAS Cape Cod travel								$2,200			
Leased flight services (E City)											$46,755
Leased flight services (Cape Cod)											$245
Drifting buoys						$67,345					
Air drop packages for drift buoys						$13,075					
Buoy data processing		$27,555									
IIP Operations	$64,886										
IIP Bulletins/Public Affairs	$3,435										
Maintenance services				$34,508							
Telex charges (CGDONE COMCEN)					$9,000						
SLAR film (E City)										$13,000	
SLAR film (Cape Cod)										$700	
Cost Driver Totals	$68,321	$27,555	$0	$34,508	$9,000	$80,420	$80,848	$117,200	$563,041	$13,700	$47,000
CIIP Totals	$139,384										
ICERECDET Totals	$161,268										
Air Station/Surveillance Totals	$740,941										
Total Season Cost	$1,041,593										

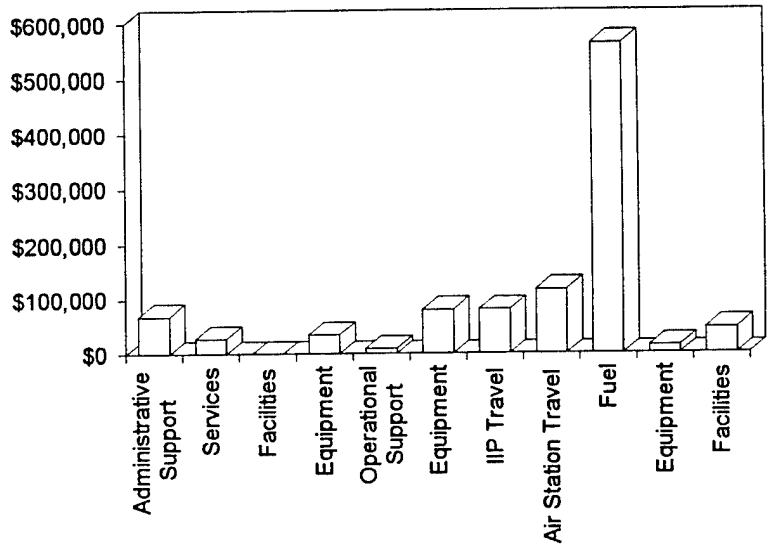


Figure 2. IIP Costs by Cost Drivers, 1994.

Table 5. CG FINCEN Cost Comparisons, 1990-1994.

Total IIP Costs	1994	1993	1992	1991	1990
Aircraft Hours	576.7	650.2	612.5	601.5	352.5
Aircraft Costs	$1,989,100	$2,008,500	$2,026,000	$1,839,800	$951,100
Office of CIIP	$864,200	$516,600	$545,900	$518,700	$359,000
IIP Computer Acquisition	$0	$0	$30,400	$314,300	$0
Other Costs	$168,600	$117,600	$108,700	$95,900	$96,200
Administrative Expense	$596,700	$602,600	$607,800	$533,500	$275,800
Total Costs	$3,618,600	$3,245,300	$3,318,800	$3,302,200	$1,682,100

Table 6. Total IIP Cost Development, 1994.

1994 IIP Costs	*CG FINCEN*	*CIIP Generated*
Office of CIIP		
Personnel	$736,400	*
Travel and Lodging	$80,800	$80,848
Leased Property	$47,000	$47,000
Total Office Costs	$864,200	$127,848
Aircraft Costs		
Personnel	$502,000	**
Fuel	$563,000	$563,041
Maintenance	$492,500	**
Operational Support	$431,600	**
Air Station Travel	***	$117,200
Total Aircraft Costs	$1,989,100	$680,241
IIP Computer Acquisition		
Hardware	$0	$0
Total IIP Acquisition Costs	$0	$0
Other Costs		
Buoys	$80,400	$80,420
Radar Film	$13,700	$13,700
Miscellaneous	$74,500	$139,384
Total Other Costs	$168,600	$233,504
Administrative Expense		
30% of Total Aircraft Costs	$596,700	$0
Total Costs	$3,618,600	$1,041,593

Notes:
* CIIP personnel costs computed using standard rates
** Personnel, Maintenace and Operational Support costs computed using standard rates for flight hours
*** Air Station travel is not explicitly included
CG FINCEN miscellaneous cost did not include $64,886 IIP Operations expense

Note that the Office of CIIP costs increased significantly in 1994. This reflects the change in policy to charge personnel costs for the entire year and not just the portion of the year during which the IIP was officially in operation. It is suspected that the prior costing policy was established when CIIP was formed for a fraction of the year from the Commander, Atlantic Area staff. The other variation in cost over the years is due to the

length of the season and the number of flight hours flown. The aircraft costs and the associated administrative expense are clearly volume-dependent costs.

Certain costs may be misleading on an annual basis. For example, the 1994 buoy costs were high due to the cost submission timetable. During FY93, but after the 1993 ice season closure, IIP placed a $23,000 order which was included in the 1994 costs as it was a buy-ahead for the 1994 season. Annual buoy orders are approximately $45,000. Other buy-aheads were included in the "IIP Operations" line for the 1994 season, thereby increasing that total.

In practice, some costs are treated as annual and others are treated based on the ice season. Consistency would follow if IIP cost submissions were made 30 days after the end of the fiscal year rather than 30 days after the ice season.

IIP Cost Analysis and Review.

Table 6 provides some significant information regarding the current costing procedures. One inconsistency is the failure of CG FINCEN to use the Air Station travel costs ($117,200) as directed in COMDTINST 7310.1E. Another concern is the failure to include $64,886 for IIP Operations. Additionally, no charge is made for depreciation for the aircraft ($210 per hour for HC-130 and $410 per hour for HU-25--1991 dollars). This total charge is $145,637 using a 5% inflation factor to adjust to 1994 dollars. Finally, it appears that an administrative expense should be computed on the operational costs exclusive of aircraft costs. This amounts to 30% of ($864,200 + $233,504) = $329,311. After making these adjustments, the actual cost of the 1994 IIP season should be $3,618,600 + $117,200 + $64,886 + $145,637 + $329,311 = $4,275,634.

The administrative expense is intended to cover the related costs associated with Headquarters, Area, MLC, and District Offices. Inclusion of this expense will cover the CG Program Management and Area Operations cost drivers in Figure 1. This also covers some of the Operational support and Administrative support activities. Not explicitly accounted for is the administrative support and facilities support that CIIP receives from the Coast Guard Research and Development Center and from the Coast Guard Academy. This support involves provision of operating facilities as well as financial management and procurement support. External management costs such as those associated with the Department of State are not included.

This review of existing costing procedures provides a basis for estimating the baseline cost of operating the International Ice Patrol.

INTERNATIONAL ICE PATROL BASELINE COSTS

IIP Baseline Cost Development.

Baseline costs depend on assumed activity levels and identification of transaction-dependent costs and volume-dependent costs. Transaction-dependent costs are those that are incurred when the operation is conducted or a particular transaction is executed (e.g., execution of a maintenance contract). Volume-dependent costs are those that depend on the level of activity (e.g., number of ICERECDET deployments, flight hours patrolled). Assuming the current IIP personnel allowance as the baseline, the baseline personnel costs can be computed using the data in Table 3. These results are included in Table 7.

Table 7. IIP Personnel Baseline Costs, 1995.

		1995 Standard Costs					
IIP Allowance	No.	Salary	PCS	O&M	Training	Medical	
CDR (O-5)	1	77,352	1,858	3,257	1,431	2,917	$86,815
LCDR (O-4)	1	65,346	1,858	3,257	1,431	2,917	$74,809
LT (O-3)	2	59,031	1,858	3,257	1,431	2,917	$136,988
MSTCS (E-8)	1	47,038	1,416	2,999	672	2,917	$55,042
MST1 (E-6)	2	34,609	1,416	2,999	672	2,917	$85,226
YN1 (E-6)	1	34,609	1,416	2,999	672	2,917	$42,613
MST2 (E-5)	3	29,249	1,416	2,999	672	2,917	$111,759
MST3 (E-4)	3	24,008	1,416	2,999	672	2,917	$96,036
GS-14	1	86,300	503	2,506	244		$89,553
GS-11	1	54,500	503	2,506	244		$57,753
Total personnel cost							$836,594

To compute the estimated IIP baseline costs, it is assumed that there will be approximately 15 ICERECDET deployments and that there will be approximately 600 flight hours required for HC-130 aircraft. to support surveillance operations. Those levels are approximately the levels experienced over the past four years. It is also assumed that there will be a continuing effort to deploy and track drift buoys at approximately the same level as 1994. Most of the projected costs correspond to the 1994 cost levels. In addition, the baseline costs include aircraft depreciation and full administrative expenses based on operational costs at the current 30% rate. The detailed cost estimates are summarized in Table 8.

The flight hour cost used in Table 8 is approximately the cost observed in 1994. In comparison with the standard cost in Table 1, the 1995 estimate follows using a 1.8% inflation rate. Note that the adjusted IIP cost for 1994 was $4,275,634 which is slightly less than the 1995 IIP Baseline cost of $4,569,222 computed in Table 8. The slight increase is due primarily to the increased personnel costs in Table 3 and the corresponding administrative expense. A small amount was provide for IIP science projects, although there are no provisions for significant IIP research (e.g., oceanographic cruises). There are no funds provided for computer equipment.

Table 8. IIP Baseline Costs, 1995.

		Transaction-dependent	Volume-dependent	Controllable
CIIP				
Personnel		$836,594		No
Services				
Buoy data processing		$28,000		Yes
Equipment maintenance		$35,000		No
Telex charges		$9,000		No
Equipment				
Drifting buoys		$67,000		Yes
Air drop packages		$13,000		Yes
Computer equipment				
Administrative support				
IIP operations		$65,000		No
IIP Bulletins/public affairs		$3,500		No
Science operations		$15,000		Yes
Administrative expense	30%	$321,628		
Total CIIP Costs		$1,393,722		
ICERECDET				
Assumed deployments	15			
IIP Travel			$42,000	Yes
Contract lodging			$38,000	Yes
Administrative expense	30%		$24,000	
Total ICERECDET Costs			$104,000	
Surveillance/Air Station				
Assumed flight hours	600			
HC-130 facility cost per hour	$3,450			
HC-130 depreciation cost per hour	$255			
Personnel/fuel/maint/ops support				
HC-130 Facility costs			$2,070,000	Yes
HC-130 Depreciation			$153,000	No
Air Crew Travel			$115,000	Yes
Facilities				
Leased flight services			$47,000	Yes
Equipment				
SLAR film			$13,000	Yes
Administrative expense	30%		$673,500	
Total Surveillance/Air Station Costs			$3,071,500	
Baseline Cost			**$4,569,222**	

Potential Cost Reductions.

Table 8 includes a column to indicate whether the individual cost element are controllable. In this context, controllable determines whether cost reductions are possible, and generally corresponds to volume-dependent activities. It is also important to identify what costs would actually be reduced with a reduction in the level of program activity and would represent a cash savings to the Coast Guard if certain aspects of the program were changed. The results of this analysis are included in Table 9.

Table 9. Potential Cash Savings with Program Changes.

Modification	Cost	Certain Savings	Potential Saings	Requirement/Status
Eliminate St. John's deployment				
Leased flight services	$47,000	$47,000		
Air Crew Travel	$115,000	$115,000		
SLAR film	$13,000	$0		SLAR film is in inventory
IIP Travel	$42,000	$42,000		
Contract lodging	$38,000	$38,000		
HC-130 facility costs	$2,070,000		$2,070,000	Requires laying up one HC-130
HC-130 depreciation costs	$153,000	$0	$0	
ICERECDET Admin expense	$24,000	$0	$0	
Surveillance Admin expense	$673,500	$0	$0	
Total Commander IIP Expenses	$3,175,500	$242,000	$2,070,000	
Eliminate drift buoy program				
Buoy data processing	$28,000	$28,000		
Drifting buoys	$67,000	$67,000		
Air drop packages	$13,000	$13,000		
Drift buoy Admin expense	$32,400	$0	$0	
Total Buoy Program Expenses	$140,400	$108,000	$0	
Eliminate CIIP				
Equipment maintenance	$35,000	$35,000		
IIP Operations	$65,000	$65,000		
IIP Bulletins/public affairs	$3,500	$3,500		
Science operations	$15,000	$15,000		
Telex charges	$9,000	$9,000		
CIIP Admin expense	$289,228	$0		
Personnel	$836,594		$836,594	Requires 16 people be dismissed
Total CIIP Expenses	$1,253,322	$127,500	$836,594	
Total cost	$4,569,222	$477,500	$2,906,594	

Table 9 indicates that if all IIP operations were terminated, the Coast Guard would realize immediate cost reductions and cash savings of $477,500. In addition, if the 16 CIIP personnel were separated, additional cash savings in the amount of $836,594 would be realized. If the personnel were simply transferred to other operating units, no savings would be realized, but presumably another program would absorb their cost. Finally, additional cash savings in the amount of $2,070,000 would be realized if the portion of the HC-130 that flies IIP missions was disestablished. The remaining $1,185,128 represents administrative expense (overhead at 30%) and aircraft depreciation costs, amounts that do not represent cash savings if the program was disestablished. Without the IIP, these costs would be shifted to other programs.

SUMMARY

In this review of the existing cost allocation procedures for the International Ice Patrol, an activity based foundation was used to identify relevant costs. The methods used by the Coast Guard were examined in this context and it was found that several cost elements are not routinely included in the IIP cost estimates. Most notable is the failure to

recover aircraft depreciation costs, air crew travel costs, and administrative expenses related to CIIP operations. The IIP cost computed by the Coast Guard Finance Center for the 1994 season was $3,618,600. Including the above omissions results in a 1994 season cost of $4, 275,634, 18% higher than the Finance Center cost.

The baseline cost for the IIP assuming full staffing, 15 ICERECDET deployments, and 600 flight hours is $4,569,222 (1995 dollars). Interestingly, elimination of the IIP would result in a cash savings of $477,500 with the potential additional savings of $2,906,594 if the 16 CIIP personnel were separated/dismissed and one HC-130 was laid up. The remaining $1,185,128 represents administrative expense (overhead) and aircraft depreciation. Without any reduction in staff and supporting organizations, this cost would be absorbed by other programs.

REFERENCES

Cooper, R., 1990. Cost Classification in Unit-Based and Activity-based Manufacturing Cost Systems, *Journal of Cost Management*, Fall, 4-13.

Kearney, Jim, 1995. Salary Cost Tables and Support Cost Tables, 1995 and 1996. Personal communication.

Stoffel, Thomas J., 1992. Activity-based Costing: The Competitive Advantage for the 1990s, *The Journal of Applied Manufacturing Systems*, Winter, 58-63.

U.S. Coast Guard, 1991. Commandant Instruction 7310.1E dtd 13 July 1991, Standard Rates.

Appendix I. Annual CIIP Costs, 1990-1994.

The data reported in this Appendix were provided by the Commander, International Ice Patrol. Specific data include:

CIIP ltr 7100 dtd 11 October 1994, International Ice Patrol Costs for the 1994 Season

CIIP ltr 7100 dtd 24 August 1993, International Ice Patrol Costs for the 1993 Season

CIIP ltr 7100 dtd 26 October 1992, International Ice Patrol Costs for the 1992 Season

CIIP ltr 7100 dtd 1 October 1991, International Ice Patrol Costs for the 1991 Season

CIIP ltr 7100 dtd 1 October 1990, International Ice Patrol Costs for the 1990 Season

[BLANK]

U.S. Department of Transportation
United States Coast Guard

Commander
International Ice Patrol

1082 Shennecossett Road
Groton, CT 06340-6095
Staff Symbol: CIIP
Phone: (203)441-2630

7100
11 October 1994

From: Commander, International Ice Patrol
To: Commandant (G-CFM)
Via: Commander, Coast Guard Atlantic Area (Ao)

Subj: INTERNATIONAL ICE PATROL COSTS FOR THE 1994 SEASON

Ref: (a) COMDT (G-NIO) ltr 3145 of 11 Oct 88
(b) E-MAIL CAPT Walker (G-NIO) / LCDR Viekman (IIP) / Mr. Howard Scullion (CG FINCEN) 28 JAN 94

1. The cost information required by reference (a) for the 1994 International Ice Patrol (IIP) season is provided herein. As discussed in reference (b), the personnel information reflects assignments for all of FY-94, including promotions of personnel serving in IIP billets. Cost information is provided for expenditures relating only to the IIP mission. Costs associated with marine science support to other CG programs is not included in these data.

a. Number of months personnel of each grade filled IIP billets:

Billet		Allowance	Person-Months
CAPT	(O-6)	0	1
CDR	(O-5)	1	11
LCDR	(O-4)	1	21
LT	(O-3)	2	24
MSTCS	(E-8)	1	12
MSTC	(E-7)	0	2
MST1	(E-6)	2	24
YN1	(E-6)	1	11
YN2	(E-5)	0	1
MST2	(E-5)	3	29
MST3	(E-4)	3	43
CIV	(GS-14)	1	11
CIV	(GS-13)	0	1
CIV	(GS-11)	1	12

b. Dates of the Ice Patrol Season:
Opened: 23 February 1994
Closed: 2 September 1994

c. Dates of Preseason Reconnaissance: 27 January 1994

d. Dates of Post-season Reconnaissance: None.

e. Types of Aircraft Used: HC-130H and HU-25B.

f. Number of Flight Hours:
HC-130H: 553.2
HU-25B: 23.5

7100
11 October 1994

Subj: INTERNATIONAL ICE PATROL COSTS FOR THE 1994 SEASON

g. No oceanographic cruise was conducted.

h. Aviation Fuel Costs:
HC-130.....557,200.50
HU-25..... 5,841.49

i. Costs:
Contract Lodging.....37,958.15
IIP Travel.....42,863.36 *
CG CGAS Elizabeth City Travel.....115,000.00 *
CG CGAS Cape Cod Travel.....2,200.00 *
* : Includes cost of Vehicle rental

j. Expenses:
Leased Space/Flight Services (E - City).....46,755.42
Leased Space/Flight Services (Cape Cod).....245.00
Deicing (Elizabeth City).....0.00
Deicing (Cape Cod).....0.00
Satellite-Tracked Drifting Buoys.....67,345.00
Air-drop Packages for Drifting Buoys.....13,075.64
Satellite Tracked Buoy Data Processing.....27,555.40
IIP Bulletins/Public Affairs.....3,435.06
IIP Operations.....64,886.65
Maintenance Services for Equipment.....34,508.73

k. Other:
TELEX charges (CGDONE COMMCEN).....9,000.00
SLAR film (Elizabeth City).....13,000.00
SLAR film (Cape Cod).....700.00

l. Total(h-k above): $1,061,570.40
1,041,597.40

2. If there are any questions about this information, please contact LCDR Bruce Viekman at (203) 441-2633.

R. TUXHORN

Copy: COMDT (G-NIO, G-CI)
CGAS Elizabeth City
CGAS Cape Cod
CCGDONE (COMMCEN)
CG FINCEN (ATTN: Mr. Howard Scullion)

U.S. Department of Transportation

United States Coast Guard

Commander
International Ice Patrol

2 Shennecossett Road
...ton, CT 06340-6095
...aff Symbol:
Phone: (203)441-2630

7100
24 August 1993

From: Commander, International Ice Patrol
To: Commandant (G-CFM)
Via: Commander, Coast Guard Atlantic Area (Ao)

Subj: INTERNATIONAL ICE PATROL COSTS FOR THE 1993 SEASON

Ref: (a) COMDT (G-NIO) ltr 3145 of 11 Oct 88

1. The information required by reference (a) for the 1993 International Ice Patrol season is provided herein.

a. Number and Grade of IIP Billets and Grade Filling:

Billet	Allowance	Complement
CDR (O-5)	1	1
LCDR (O-4)	1	1
LT (O-3)	2	2
MSTCS (E-8)	1	1
MST1 (E-6)	2	4
YN1 (E-6)	1	0
YN2 (E-5)	0	1
MST2 (E-5)	3	2
MST3 (E-4)	3	4
CIV (GS-13)	1	1
CIV (GS-11)	1	1

b. Dates of the Ice Patrol Season:
Opened: 2 February 1993
Closed: 30 July 1993

c. Dates of Preseason Reconnaissance: 11-18 January 1993, 29 January - 9 February 1993

d. Dates of Post-season Reconnaissance: None.

e. Types of Aircraft Used: HC-130H and HU-25B.

f. Number of Flight Hours:
HC-130H: 586.6
HU-25B: 63.6

h. Dates of Oceanographic Cruise: 8 July - 23 July 1993.
Vessel utilized: USCGC BITTERSWEET (WLB 389)

g. Aviation fuel costs:
HC-130 $420,795.00
HU-25 $18,605.00

7100
16 August 1993

Subj: INTERNATIONAL ICE PATROL COSTS FOR THE 1993 SEASON

1. i. Costs:

Contract Lodging	49,896.00
IIP Travel	44,593.24 *
CG CGAS Elizabeth City Travel	87,000.00 *
CG CGAS Cape Cod Travel	7,500.00 *

* : Includes cost of Vehicle rental

j. Expenses:

Leased Space/Flight Services (E - City)	35,293.42
Leased Space/Flight Services (Cape Cod)	427.00
Deicing (Elizabeth City)	0.00
Deicing (Cape Cod)	0.00
Air-drop Packages for Drifting Buoys	16,853.22
Satellite Tracked Buoy Data Processing	25,834.03
IIP Bulletins/Public Affairs	1,644.41
IIP Operations	18,119.68
IIP Oceanographic Cruise	10,245.34
Maintenance Services for Equipment	39,700.02

k. Other:

TELEX charges (CGDONE COMMCEN)	9,000.00
SLAR film (Elizabeth City)	14,000.00
SLAR film (Cape Cod)	345.00

l. Total(g-k above): $799,851.36

2. If there are any questions about this information, please contact LCDR Bruce Viekman at (203) 441-2633.

ALAN SUMMY

Copy: COMDT (G-NIO, G-CI)
CGAS Elizabeth City
CGAS Cape Cod
CCGDONE (COMMCEN)
CG FINCEN

U.S. Department of Transportation
United States Coast Guard

Commander
International Ice Patrol

[redacted], CT 06340-6095
Staff Symbol:
Phone: (203)441-2630

7100
26 October 1992

From: Commander, International Ice Patrol
To: Commandant (G-CAC)
Via: Commander, Coast Guard Atlantic Area (Ao)

Subj: INTERNATIONAL ICE PATROL COSTS FOR THE 1992 SEASON

Ref: (a) COMDT (G-NIO) ltr 3145 of 11 Oct 88

1. The information required by reference (a) for the 1992 International Ice Patrol season is provided herein.

a. Number and Grade of IIP Billets and Grade Filling:

Billet		Allowance	Complement
CDR	(O-5)	1	1
LCDR	(O-4)	1	1
LT	(O-3)	2	2
MSTCS	(E-8)	1	1
MST1	(E-6)	2	2
YN1	(E-6)	1	0
YN2	(E-5)	0	1
MST2	(E-5)	3	5
MST3	(E-4)	3	3
CIV	(GS-13)	1	1
CIV	(GS-11)	1	1

b. Dates of the Ice Patrol Season:
Opened: 7 March 1992
Closed: 26 September 1992

c. Dates of Preseason Reconnaissance: None.

d. Dates of Post-season Reconnaissance: None.

e. Types of Aircraft Used: HC-130H and HU-25B.

f. Number of Flight Hours:
HC-130H: 524.0
HU-25B: 88.5

h. Dates of Oceanographic Cruise: None Conducted in 1992.

g. Aviation fuel costs:
HC-130.....$573,176.00
HU-25.....35,465.00

7100
26 October 1992

Subj: REPORT OF THE 1992 SEASON OF THE INTERNATIONAL ICE PATROL

1. i. Costs:

Contract Lodging	$34,569.42
IIP Travel	45,627.80*
CG CGAS Elizabeth City Travel	83,071.18*
CG CGAS Cape Cod Travel	6,371.97*

* : Includes cost of Vehicle rental

j. Expenses:

Leased Space/Flight Services (Elizabeth City)	$38,673.00
Leased Space/Flight Services (Cape Cod)	537.00
Deicing (Elizabeth City)	0.00
Deicing (Cape Cod)	1690.90
Satellite Tracked Drifting Buoys	37,238.79
Satellite Tracked Buoy Data Processing	28,624.04
IIP Bulletins/Public Affairs	2,049.85
IIP Operations	40,560.98
IIP Oceanographic Cruise Equipment Upgrade	30,389.75
Maintenance Services for Equipment	17,341.21

k. Other:

TELEX charges (CGDONE COMMCEN)	$6,000.00
SLAR film (Elizabeth City)	15,000.00
SLAR film (Cape Cod)	2,500.00

l. Total(g-k above): $998,886.89

2. If there are any questions about this information, please contact LCDR Iain Anderson at (203) 441-2633.

ALAN SUMMY

Copy: COMDT (G-NIO, G-CI)
CGAS Elizabeth City
CGAS Cape Cod
CCGDONE (COMMCEN)

U.S. Department of Transportation
United States Coast Guard

Commander
International Ice Patrol

1082 Shennecossett Rd
Groton, CT 06340-6095
Phone: (203) 441-2630
FTS: 642-2630

7100
1 October 1991

From: Commander, International Ice Patrol
To: Commandant (G-CAC)
Via: Commander,, Coast Guard Atlantic Area (Ao)

Subj: INTERNATIONAL ICE PATROL SERVICE COSTS FOR THE 1991 SEASON

Ref: (a) COMDT (G-NIO) ltr 3145 of 11 OCT 88

1. The information required by reference (a) for the 1991 International Ice Patrol season is provided herein.

a. Number and Grade of IIP Billets and Grade Filling:

Billet		Allowance	Complement
CDR	(O-5)	1	1
LCDR	(O-4)	1	1
LT	(O-3)	2	2
MSTCM	(E-9)	0	1
MSTCS	(E-8)	1	1
MSTC	(E-7)	0	1
MST1	(E-6)	2	0
YN1	(E-6)	1	1
MST2	(E-5)	3	5
MST3	(E-4)	3	4
CIV	(GS-13)	1	1
CIV	(GS-11)	1	1

b. Dates of the Ice Patrol Season:
Opened: 23 February 1991
Closed: 24 August 1991

c. Dates of Preseason Reconnaissance: None.

d. Dates of Post-season Reconnaissance: None

e. Types of Aircraft Used: HC-130H and HU-25B.

f. Number of Flight Hours:
HC-130H: 532.7
HU-25B: 68.8

h. Dates of Oceanographic Cruises: 29 April - 24 May 1991

g. Aviation fuel costs:
HC-130.....$491,255.94
HU-25.....34,682.55

K
C
F
Q
B

7100
1 October 1991

Subj: REPORT OF THE 1991 SEASON OF THE INTERNATIONAL ICE PATROL

1. i. Costs:

Lodging	$28,254.00
IIP Travel	40,875.09*
CG CGAS Elizabeth City Travel	85,583.85*
CG CGAS Cape Cod Travel	5,575.15*
CG CGAS Clearwater Travel	16,000.00*

* : Includes cost of Vehicle rental

j. Expenses:

Leased Space/Flight Services (Elizabeth City)	$44,626.00
Leased Space/Flight Services (Cape Cod)	244.50
Deicing (Elizabeth City)	18,872.70
Deicing (Cape Cod)	0.00
TIROS Oceanographic Drifters (TOD)	47,700.29
TOD Data Processing	27,695.00
CG-188-xx Printing	741.00
IIP Operations	12,259.82
IIP Research (includes cruise)	23,033.15

l. New IIP Computer System:

Hardware	$176,447.59
Software	129,036.00
Site Preparations	4,355.73
Travel for System Familiarization	4,519.88

l. Other:

TELEX charges (CGDONE COMMCEN)	$9,600.00
SLAR film (Elizabeth City)	10,000.00
SLAR film (Cape Cod)	233.00

m. Total(g-l above): $1,211,591.24

2. If there are any questions about this information, please contact LCDR Iain Anderson at FTS 642-2633.

J. J. MURRAY

Copy: COMDT (G-NIO, G-CI)
CGAS Elizabeth City
CGAS Cape Cod
CCGDONE (COMMCEN)

U.S. Department of Transportation
United States Coast Guard

Commander
International Ice Patrol
Avery Point
Groton, CT 06340
Phone: (203) 441-2630
FTS 642-2630

7100
1 October 1990

From: Commander, International Ice Patrol
To: Commandant (G-CAC)
Via: Commander, Coast Guard Atlantic Area (Ao)

Subj: INTERNATIONAL ICE PATROL SERVICE COSTS FOR THE 1990 SEASON

Ref: (a) COMDT (G-NIO) ltr 3145 of 11 OCT 88

1. The information required by reference (a) for the 1990 International Ice Patrol season is provided herein.

a. Number and Grade of IIP Billets and Grade Filling:

Billet		Allowance	Complement
CDR	(O-5)	1	1
LCDR	(O-4)	1	1
LT	(O-3)	2	0
LTJG	(O-2)	0	2
MSTCM	(E-9)	0	1
MSTCS	(E-8)	1	1
MSTC	(E-7)	0	1
MST1	(E-6)	2	2
YN1	(E-6)	1	1
MST2	(E-5)	3	1
MST3	(E-4)	3	5
CIV	(GS-13)	1	1
CIV	(GS-11)	1	0

b. Dates of the Ice Patrol Season:
Opened: 9 March 1990
Closed: 15 August 1990

c. Dates of Preseason Reconnaissance: None.

d. Dates of Post-season Reconnaissance: None

e. Types of Aircraft Used: HC-130H, and HU-25B.

f. Number of Flight Hours:
HC-130H: 259.5
HU-25B: 93

h. Dates of Oceanographic Cruises: 8-24 June 1990

g. Aviation fuel costs:
HC-130.....$124,550.00
HU-25.....17,335.20

7100
1 October 1990

Subj: REPORT OF THE 1990 SEASON OF THE INTERNATIONAL ICE PATROL

1. i. Costs:

Lodging	$19,924.00
IIP Travel	34,183.06*
CG CGAS Elizabeth City Travel	52,858.24*
CG CGAS Cape Cod Travel	8,224.04*

* : Includes cost of Vehicle rental

j. Expenses:

Leased Space/Flight Services (Elizabeth City)	$18,914.70
Leased Space/Flight Services (Cape Cod)	3,405.00
Deicing (Elizabeth City)	0.00
Deicing (Cape Cod)	0.00
TIROS Oceanographic Drifters (TOD)	59,292.04
TOD Data Processing	21,650.00
CG-188-xx Printing	0.00
IIP Operations	31,312.88
IIP Research	15,734.66

k. Other:

TELEX charges (CGDONE COMMCEN)	$5,515.36
SLAR film (Elizabeth City)	7,341.25
SLAR film (Cape Cod)	2,400.00

l. Total(g-k above): $422,640.43

2. If there are any questions about this information, please contact LCDR Iain Anderson at FTS 642-2633.

J. J. MURRAY

Copy: COMDT (G-NIO, G-CI)
CGAS Elizabeth City
CGAS Cape Cod
CCGDONE (COMMCEN)

Appendix II. Annual IIP Costs as Computed by CG FINCEN, 1992-1994.

The data reported in this Appendix were provided by the Commander, International Ice Patrol. Specific data include:

Statement of Costs for the 1992 Season
Statement of Costs for the 1993 Season
Statement of Costs for the 1994 Season

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DEPARTMENT OF TRANSPORTATION - U. S. COAST GUARD
INTERNATIONAL ICE PATROL
STATEMENT OF COSTS FOR 1993 SEASON

AIRCRAFT COSTS:	
PERSONNEL	$539,200
FUEL	439,400
MAINTENANCE	556,200
OPERATIONAL SUPPORT	473,700
TOTAL AIRCRAFT COSTS	$2,008,500
OFFICE OF COMMANDER INT'L ICE PATROL:	
PERSONNEL	$386,400
TRAVEL AND LODGING	94,500 — Com or Ltr
LEASED PROPERTY	35,700 — Leased Space
TOTAL OFFICE COSTS	$516,600
NEW IIP COMPUTER SYSTEMS ACQUISITION COSTS:	
HARDWARE	$0
TOTAL NEW IIP ACQUISITION COSTS	$0
OTHER COSTS:	
BUOYS	$16,900
AIRBORNE SENSOR EVALUATION	10,200
RADAR FILM	14,300
MISCELLANEOUS	76,200
TOTAL OTHER COSTS	$117,600
ADMINISTRATIVE EXPENSE	$602,600
TOTAL COSTS	$3,245,300

ENCLOSURE (1)

DEPARTMENT OF TRANSPORTATION - U. S. COAST GUARD
INTERNATIONAL ICE PATROL
STATEMENT OF COSTS FOR 1992 SEASON

AIRCRAFT COSTS:	
PERSONNEL	$461,900
FUEL	608,700 (From IIP Ltr)
MAINTENANCE	521,400
OPERATIONAL SUPPORT	434,000
TOTAL AIRCRAFT COSTS	$2,026,000
OFFICE OF COMMANDER INT'L ICE PATROL:	
PERSONNEL (Per Season Length)	424,800 [redacted]
TRAVEL AND LODGING	80,200 (IIP Only Travel/Per Diem
LEASED PROPERTY	40,900 (Leased Space + Deicing)
TOTAL OFFICE COSTS	$545,900
NEW IIP COMPUTER SYSTEMS ACQUISITION COSTS:	
HARDWARE	30,400 (IIP Cruise Equip Upgrade)
TOTAL NEW IIP ACQUISITION COSTS	$30,400
OTHER COSTS:	
BUOYS	37,200 (Satellite Tracked Buoys
RADAR FILM	17,500 (SLAR Film Total)
MISCELLANEOUS	54,000 *
TOTAL OTHER COSTS	$108,700
ADMINISTRATIVE EXPENSE	$607,800
TOTAL COSTS	$3,318,800

Base on # Flt Hrs

* Satellite Data Processing
IIP Bulletins / PA
Maintenance
Telex Charges

R/OT Included (Directly)
- Air Sta Per Diem Cost
- IIP Operations

DEPARTMENT OF TRANSPORTATION - U. S. COAST GUARD
INTERNATIONAL ICE PATROL
STATEMENT OF COSTS FOR 1994 SEASON

AIRCRAFT COSTS:	
PERSONNEL	$502,000
FUEL	563,000
MAINTENANCE	492,500
OPERATIONAL SUPPORT	431,600
TOTAL AIRCRAFT COSTS	$1,989,100
OFFICE OF COMMANDER INT'L ICE PATROL:	
PERSONNEL	$736,400
TRAVEL AND LODGING	80,800
LEASED PROPERTY	47,000
TOTAL OFFICE COSTS	$864,200
NEW IIP COMPUTER SYSTEMS ACQUISITION COSTS:	
HARDWARE	$0
TOTAL NEW IIP ACQUISITION COSTS	$0
OTHER COSTS:	
BUOYS	$80,400
RADAR FILM	13,700
MISCELLANEOUS	74,500
TOTAL OTHER COSTS	$168,600
ADMINISTRATIVE EXPENSE	$596,700
TOTAL COSTS	$3,618,600

Enclosure (1)